



“Knowledge Regarding Gestational Diabetes Mellitus Among The Antenatal Mothers In Selected Hospitals Of Kamrup (M), Assam, With A View To Develop An Information Booklet: A Descriptive Study.”

KENTER RINA¹, LIPIKA HAZARIKA², DHRITEE DAS³

¹M. Sc Nursing, Department of Community Health Nursing, Asian Institute of Nursing Education, North Guwahati, Assam, India

² Assistant Professor, Department of Community Health Nursing, Asian Institute of Nursing Education, North Guwahati, Assam, India.

³ Lecturer, Department of Community Health Nursing, Asian Institute of Nursing Education, North Guwahati, Assam, India

Corresponding Author: Kenter Rina

Abstract:

BACKGROUND

Gestational Diabetes mellitus was first described in 1824 by Bennewitz in Germany, with subsequent case series in the United Kingdom and United States reporting high perinatal mortality rates in women with diabetes in pregnancy. The term ‘Gestational Diabetes Mellitus’ (GDM) was introduced by O’Sullivan in 1961. Gestational diabetes mellitus affects approximately 15% of pregnancies worldwide, accounting for approximately 18 million births annually. Mothers with gestational diabetes mellitus are at risk of developing gestational hypertension, pre-eclampsia and termination of pregnancy via Caesarean section. In addition, gestational diabetes mellitus increases the risk of complications, including cardiovascular disease, obesity and impaired carbohydrate metabolism, leading to the development of type 2 diabetes (T2DM) in both the mother and infant.

Gestational diabetes mellitus is a treatable condition and women who have adequate control on glucose level can effectively decrease the associated risks. Awareness of the condition among antenatal women will help in prevention and early diagnosis of the disease thereby prevent fetal complications and increase maternal quality of life.

OBJECTIVES OF THE STUDY

- 1.To assess the level of knowledge regarding gestational diabetes mellitus among the antenatal mothers in selected hospitals of Kamrup(M), Assam.
- 2.To find out the association between knowledge regarding gestational diabetes mellitus with selected demographic variables

METHODS AND MATERIALS

A descriptive research design was used to accomplish the objectives of the study. The study was conducted in the Satribari Christian hospital and Akanksha hospital of Guwahati, Assam. A total of 100 antenatal mothers were included in the study who were attending antenatal OPD and admitted in antenatal ward. Non probability convenience sampling technique and quantitative approach were adapted to achieved the study objectives. The study was conducted from 10th September 2024 to 3rd October 2024. Antenatal mothers were selected on the basic of inclusion and exclusion criteria. Knowledge was checked using self-structured knowledge questionnaire.

RESULTS

The study result revealed that out of 100 antenatal mothers, majority of them i.e 52% were aged >30 years, 52% had graduate level of education, 52% were home maker/housewife, 65% were residing in urban area, 46% received information through relatives and friends, 37% were in 3rd trimester of their pregnancy, 76% belongs to joint family, 57% antenatal mothers are in their first pregnancy, 100% had no previous history of diabetes, 51% had 70-95 mg/dl blood sugar level at the time of first antenatal check-up.

Most of the antenatal mothers i.e 55% had moderate knowledge, 30% had inadequate knowledge and 15% had adequate knowledge about gestational diabetes mellitus.

In association, the results showed that there was significant association between the knowledge and selected demographic variables of educational status and source of information.

The demographic variables, educational status ($p=0.0001$) had shown statistically significant association with level of knowledge on gestational diabetes mellitus among antenatal mothers at $p< 0.001$ level and the demographic variables source of information ($\chi^2=9.804$, $p=0.044$) had shown statistically significant association with level of knowledge on gestational diabetes mellitus among antenatal mothers at $p< 0.05$ level

CONCLUSION

Based on the analysis of the findings of the study, it was evident that majority of the antenatal mothers had moderate knowledge regarding gestational diabetes mellitus. So, the investigator concluded that proper health education and awareness regarding gestational diabetes mellitus is needed in order to improve the knowledge among antenatal mothers which will help to prevent short-term and long-term complication of gestational diabetes mellitus for both mother and baby.

KEY WORDS

Knowledge, gestational diabetes mellitus, information booklet.

INTRODUCTION

Gestational diabetes mellitus (GDM) is a metabolic condition of pregnancy that presents as newly developing hyperglycemia in pregnant women who did not have diabetes before getting pregnant, and it normally resolves after giving birth. Although one can develop gestational diabetes mellitus during the entire course of pregnancy, it is typically seen between weeks 24 and 28 of pregnancy. Gestational diabetes mellitus is one of the most common medical complications of pregnancy and is increasing in prevalence globally. Gestational diabetes mellitus is a treatable condition and awareness of the condition among antenatal women will help in prevention and early diagnosis of the disease thereby prevent fetal complications and increase maternal quality of life.

Initial treatment for gestational diabetes mellitus involves diet and activity modification. Women with gestational diabetes mellitus should receive individualized nutrition counseling from a registered dietitian, which commonly includes a recommendation to limit carbohydrate intake to 33% to 40% of calories and also aerobic exercise and resistance training clearly improve glycemic control in patients with diabetes. Exercise for 30 minutes most days of the week is a reasonable goal for most patients with gestational diabetes mellitus. Insulin is required in women who have uncontrolled blood glucose levels despite lifestyle changes and use of oral medications.

Intense screening, follow-up, and preventive measures for women with gestational diabetes mellitus after delivery can help to mitigate impending T2DM in an individual patient, and potentially in an entire population, epidemiologically.

OBJECTIVES

- 1.To assess the level of knowledge regarding gestational diabetes mellitus among the antenatal mothers in selected hospital of Kamrup(M), Assam.
- 2.To find out the association between knowledge regarding gestational diabetes mellitus with selected demographic variables

HYPOTHESIS

H₁: There is a significant association between level of knowledge regarding gestational diabetes mellitus with selected demographic variables.

METHODOLOGY:

A descriptive study design was used to accomplish the objectives. Study was undertaken on 100 antenatal mothers who were attending antenatal OPDs and admitted in antenatal ward of selected hospitals of Kamrup (M), Assam by using non-probability convenience sampling technique. Participants were selected based on inclusion and exclusion criteria. Self-Structured knowledge questionnaire was used to assess the level of knowledge and after completion of the knowledge questionnaire an information booklet was distributed among antenatal mothers to enhance their knowledge regarding gestational diabetes mellitus. The reliability of the tool was 0.87.

DESCRIPTION OF THE TOOL:

In order to meet the objective of the present study, the following tools were developed which consists of two sections:

SECTION I : Demographic variables

SECTION II : Self-structured knowledge questionnaire on GDM

DATA COLLECTION PROCESS:

The data collection process was schedule from 10th September to 3rd October 2024. After obtaining ethical clearance from the Ethics Committee of the Institution of Neurological Sciences Trust (INST) GNRC complex Dispur, Guwahati, Assam. A formal written permission was taken from the Medical Superintendent of Satribari Christian hospital and Medical Director of Akanksha hospital for conducting the research study in their respective institution by the investigator prior to data collection. The investigator visited the hospitals on the schedule dates and started collecting data from the participants. The investigator introduce herself and the topic of the study, purpose of the study was explained to them. All the participants had signed informed consent permission before the research was conducted. They were provided self-structured knowledge questionnaire to evaluate their knowledge regarding gestational diabetes mellitus which took approximately 20 to 30 minutes to complete the questionnaire. After that the investigator distributed the information booklet to the participants to improved their knowledge regarding gestational diabetes mellitus.

RESULTS:**SECTION I :**

Frequency and percentage distribution of antenatal mothers according to their demographic variables

Table 1: Frequency and percentage distribution of antenatal mothers according to their demographic variables

n=100

Demographic Variables	Frequency (f)	Percentage (%)
1.Age (in years)		
21 to 23	12	12.0
24 to 26	13	13.0
27 to 29	23	23.0
≥30	52	52.0
2.Educational status		
No formal education	-	-
Primary school	13	13.0
Secondary school	35	35.0
Graduate and above	52	52.0
3.Occupational status		
Homemaker	52	52.0
Daily wage earner	2	2.0
Government employee	16	16.0
Private employee	16	16.0
Others	14	14.0
4.Residential area		
Rural	35	35.0
Urban	65	65.0
5.Source of information		
Relatives and friends	46	46.0
Mass media	19	19.0
Health care personnel	35	35.0
6.Duration of pregnancy		
1st trimester [till 12 weeks]	25	25.0
2nd trimester [12 to 28 weeks]	38	38.0
3rd trimester [above 28 weeks]	37	37.0
7.Type of the family		
Nuclear	24	24.0
Joint	76	76.0
Extended	-	-
8.Number of pregnancies		
First pregnancy	57	57.0
Second pregnancy	38	38.0
Third pregnancy	5	5.0
More than three pregnancies	-	-
9.Are you diabetic before pregnancy?		
Yes	-	-

No	100	100
10.Random blood sugar level at the time of first Antenatal checkup.		
60-95 mg/dl	14	14.0
70-95mg/dl	51	51.0
100- 120 mg/dl	31	31.0
Above 120 mg/dl	4	4.0

The table 1 portrays that most of the antenatal mothers, 52 (52%) were aged ≥ 30 years, 52 (52%) were graduate and above, 52 (52%) were homemakers, 65 (65%) were residing in urban area, 46 (46%) received information through relatives and friends, 38(38%) were in 2nd trimester of pregnancy, 76 (76%) belonged to joint family, 57 (57%) were in first pregnancy, 100 (100%) were not diabetes before pregnancy and 51 (51%) had RBS in the range between 70 – 95 mg/dl at the time of first antenatal checkup.

SECTION II:

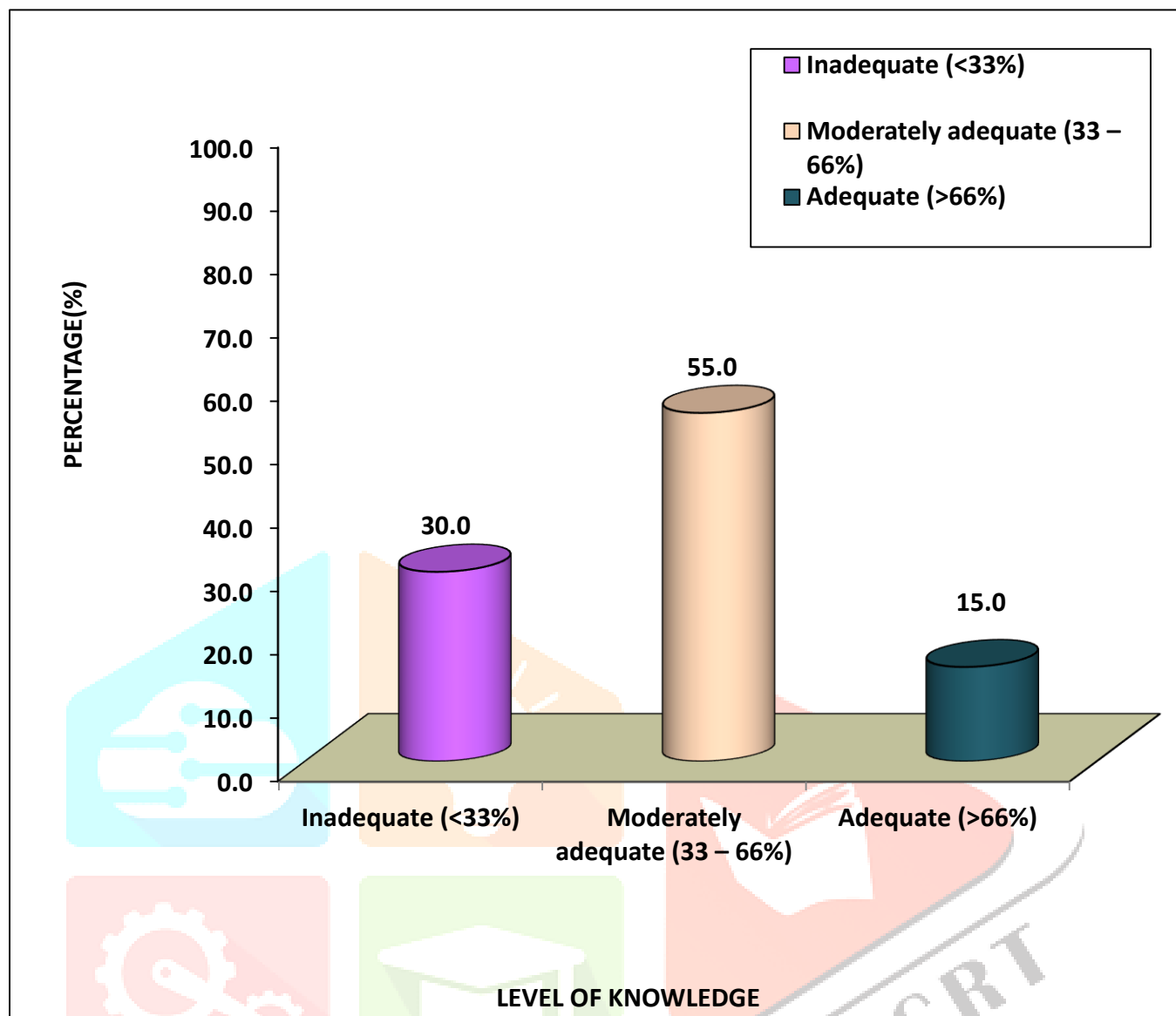
Frequency and percentage distribution of level of knowledge regarding Gestational Diabetes Mellitus among antenatal mothers.

Table 2: Frequency and percentage distribution of level of knowledge regarding Gestational Diabetes Mellitus among antenatal mothers.

Level of Knowledge	Frequency (f)	Percentage (%)
Inadequate (<33%)	30	30.0
Moderately adequate (33 – 66%)	55	55.0
Adequate (>66%)	15	15.0

The table 2 depicts the frequency and percentage distribution of level of knowledge regarding Gestational Diabetes Mellitus among antenatal mothers.

It shows that 55(55%) had moderately adequate knowledge, 30(30%) had inadequate knowledge and 15(15%) had adequate knowledge regarding Gestational Diabetes Mellitus among antenatal mothers.



CYLINDRICAL DIAGRAM SHOWING PERCENTAGE DISTRIBUTION OF LEVEL OF KNOWLEDGE REGARDING GESTATIONAL DIABETES MELLITUS AMONG ANTENATAL MOTHERS.

SECTION III:

Association of level of knowledge of gestational diabetes mellitus among the antenatal mothers with their selected demographic variables

Table 3: Association of level of knowledge of gestational diabetes mellitus among the antenatal mothers with their selected demographic variables

							n=100
Demographic Variables	Inadequate		Moderately adequate		Adequate		Chi-Square p-value / Fisher Exact test p-value
	f	%	f	%	f	%	
1.Age (in years)							p=0.792 N. S
21 to 23	6	6.0	5	5.0	1	1.0	
24 to 26	3	3.0	7	7.0	3	3.0	
27 to 29	7	7.0	13	13.0	3	3.0	
≥30	14	14.0	30	30.0	8	8.0	
2.Educational status							p=0.0001 S***
No formal education	-	-	-	-	-	-	
Primary school	7	7.0	5	5.0	1	1.0	
Secondary school	16	16.0	19	19.0	0	0	
Graduate and above	7	7.0	31	31.0	14	14.0	
3.Occupational status							p=0.054 N. S
Homemaker	18	18.0	31	31.0	3	3.0	
Daily wage earner	1	1.0	1	1.0	0	0	
Government employee	2	2.0	8	8.0	6	6.0	
Private employee	3	3.0	9	9.0	4	4.0	
Others	6	6.0	6	6.0	2	2.0	
4.Residential area							$\chi^2=2.657$ d.f=2 p=0.265 N. S
Rural	14	14.0	17	17.0	4	4.0	
Urban	16	16.0	38	38.0	11	11.0	
5.Source of information							$\chi^2=9.804$ d.f=4 p=0.044 S*
Relatives and friends	17	17.0	27	27.0	2	2.0	
Mass media	3	3.0	10	10.0	6	6.0	
Health care personnel	10	10.0	18	18.0	7	7.0	
6.Duration of pregnancy							$\chi^2=5.355$ d.f=4 p=0.253 N. S
1 st trimester [till 12 weeks]	10	10.0	13	13.0	2	2.0	
2 nd trimester [12 to 28 weeks]	10	10.0	24	24.0	4	4.0	
3 rd trimester [above 28 weeks]	10	10.0	18	18.0	9	9.0	
7.Type of the family							$\chi^2=2.711$ d.f=2 p=0.258 N. S
Nuclear	4	4.0	16	16.0	4	4.0	
Joint	26	26.0	39	39.0	11	11.0	
Extended	-	-	-	-	-	-	

Demographic Variables	Inadequate		Moderately adequate		Adequate		Chi-Square p-value / Fisher Exact test p-value
	f	%	f	%	f	%	
8.Number of pregnancies							p=1.000 N. S
First pregnancy	17	17.0	31	31.0	9	9.0	
Second pregnancy	12	12.0	21	21.0	5	5.0	
Third pregnancy	1	1.0	3	3.0	1	1.0	
More than three pregnancies	-	-	-	-	-	-	
9.Antenatal mothers with history of diabetic							-
Yes	-	-	-	-	-	-	
No	30	30.0	55	55.0	15	15.0	
10.Random blood sugar level at the time of first Antenatal checkup.							p=0.306 N. S
60-95 mg/dl	3	3.0	11	11.0	0	0	
70-95mg/dl	18	18.0	25	25.0	8	8.0	
100- 120 mg/dl	9	9.0	16	16.0	6	6.0	
Above 120 mg/dl	0	0	3	3.0	1	1.0	

***p<0.001, *p<0.05, S – Significant

N.S – Not Significant, p>0.05

INTERPRETATION:

It was observed that the demographic variables educational status related to gestational diabetes mellitus ($p = 0.0001$) had statistically significant association with level of knowledge regarding gestational diabetes mellitus among antenatal mothers at $p < 0.001$ level.

Hence, the research hypothesis (H1) was accepted and the null hypothesis (H01) was rejected, and infers that there is an association of knowledge with the selected demographic variable like educational status.

It was also observed that the demographic variable source of information related to gestational diabetes mellitus ($p=0.044$) had statistically significant association with level of knowledge regarding gestational diabetes mellitus among antenatal mothers at $p < 0.05$ level.

Hence, the research hypothesis (H1) was accepted and the null hypothesis (H01) was rejected, and infers that there is an association of knowledge with the selected demographic variable like source of information.

The null hypothesis (H01) was accepted and the research hypothesis (H1) was rejected with the selected demographic variables like age in years, occupation status, residential area, duration of pregnancy, types of the family, number of pregnancies, and random blood sugar level at the time of first antenatal check-up.

Hence, there is no association between level of knowledge regarding gestational diabetes mellitus among antenatal mothers with the selected demographic variables like age in years, occupation status, residential area, duration of pregnancy, types of the family, number of pregnancies, and random blood sugar level at the time of first antenatal check-up at $p < 0.05$ level and $p < 0.001$ level.

CONCLUSION:

Based on the analysis of the findings of the study, the following inferences were drawn:

The study revealed that out of 100 respondents, i.e. 52% were aged between above 30 years, 52% had graduate and above, 52% were homemaker, 65% were residing in urban area, 46% had/heard about gestational diabetes mellitus from relatives and friends, 38% were in 2nd trimester, 76% were from joint family, 57% were in first pregnancy, 100% does not had diabetes before pregnancies and 52% had a 70-95 mg/dl of random blood sugar level at the time of first antenatal check-up.

In knowledge, the result showed that out of 100 respondents, i.e 55% respondents had moderate knowledge, 30 respondents had inadequate knowledge and 15% respondents had adequate level of knowledge with mean and standard deviation 10.85 and 4.59 respectively.

In association, the results showed that there was no significant association between the knowledge and selected demographic variables of age (in years), occupational status, residential area, duration of pregnancy, type of the family, number of pregnancy and random blood sugar level at the time of first antenatal check-up.

In association, the results showed that there was significant association between the knowledge and selected demographic variables of educational status and source of information.

The demographic variables, educational status ($p=0.0001$) had shown statistically significant association with level of knowledge on gestational diabetes mellitus among antenatal mothers at $p< 0.001$ level and the demographic variables source of information ($\chi^2=9.804$, $p=0.044$) had shown statistically significant association with level of knowledge on gestational diabetes mellitus among antenatal mothers at $p< 0.05$ level.

The investigator has provided information booklet as reinforcement to all the antenatal mothers in selected hospitals irrespective of their level of knowledge after the data collection to enhance their knowledge on gestational diabetes mellitus.

Thus, this study gives the area to improve the knowledge regarding gestational diabetes mellitus among antenatal mothers.

REFERENCE:

- 1.Sweeting A, Wong J, Murphy HR, Ross GP. A clinical update on gestational diabetes mellitus. *Endocr Rev* [Internet]. 2022;43(5):763–93. Available from: <http://dx.doi.org/10.1210/endrev/bnac003>
- 2.Chakraborty A, Yadav S. Prevalence and determinants of gestational diabetes mellitus among pregnant women in India: an analysis of National Family Health Survey Data. *BMC Women's Health* [Internet]. 2024;24(1). Available from: <http://dx.doi.org/10.1186/s12905-024-02936-0>
- 3.Nakshine VS, Jogdand SD. A comprehensive review of gestational diabetes mellitus: Impacts on maternal health, fetal development, childhood outcomes, and long-term treatment strategies. *Cereus* [Internet]. 2023; Available from: <http://dx.doi.org/10.7759/cureus.47500>
- 4.Modzelewski R, Stefanowicz-Rutkowska MM, Matuszewski W, Bandurska-Stankiewicz EM. Gestational diabetes mellitus—recent literature review. *J Clin Med* [Internet]. 2022;11(19):5736. Available from: <http://dx.doi.org/10.3390/jcm11195736>
- 5.George J, Joseph S, Kumari S, Bhaskar S, Sharma S. Knowledge on gestational diabetes among antenatal mothers attending antenatal OPD [Internet]. Available from: <https://www.ijsr.net/archive/v11i4/SR22425200205.pdf>
- 6.Garrison A. Screening, diagnosis, and management of gestational diabetes mellitus. *Am Fam Physician*. 2015;91(7):460–7.
- 7.Bhattacharya S, Nagendra L, Krishnamurthy A, Lakhani OJ, Kapoor N.B, et al. Early gestational diabetes mellitus: Diagnostic strategies and clinical implications. *Med Sci (Basel)* [Internet]. 2021;9(4):59. Available from: <http://dx.doi.org/10.3390/medsci9040059>
- 8.Thanawala U, Divakar H, Jain R, Agarwal MM. Negotiating gestational diabetes mellitus in India: A national approach. *Medicina (Kaunas)* [Internet]. 2021;57(9):942. Available from: <http://dx.doi.org/10.3390/medicina57090942>
- 9.Ogu RN, Maduka O, Agala V, Alamina F, Adebisi O, Edewor U, et al. Gestational diabetes mellitus knowledge among women of reproductive age in Southern Nigeria: Implications for diabetes education. *Int*

Q Community Health Educ [Internet]. 2020;40(3):177–83. Available from: <http://dx.doi.org/10.1177/0272684x19876526>

10. Caputo M, Bullara V, Mele C, Samà MT, Zavattaro M, Ferrero A, et al. Gestational diabetes mellitus: Clinical characteristics and perinatal outcomes in a multiethnic population of North Italy. Int J Endocrinol [Internet]. 2021; 2021:1–10. Available from: <http://dx.doi.org/10.1155/2021/9474805>